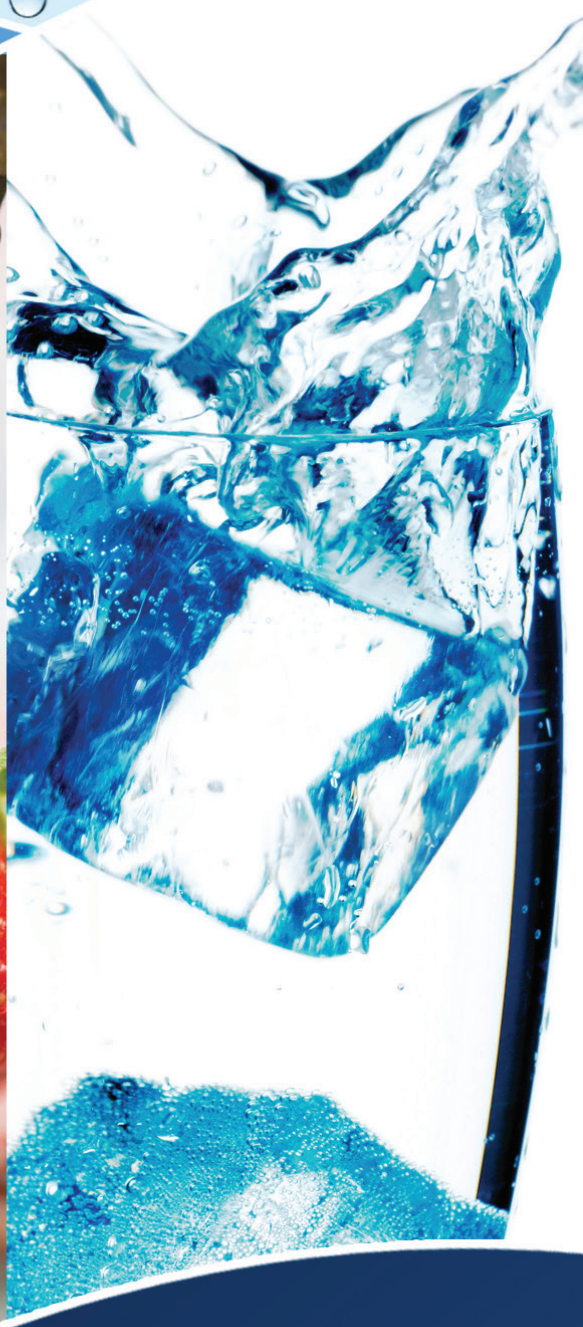
ANNUAL WATER QUALITY REPORT

Water Testing
Performed
in 2014



Presented By
Town of Ipswich
Water Department

PWS ID#: 3144000

Continuing Our Commitment

We are again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2014. Most notably, last year marked the 40th anniversary of the Safe Drinking Water Act (SDWA). This rule was created to protect public health by regulating the nation's drinking water supply. We celebrate this milestone as we continue to manage our water system with a mission to deliver the best-quality drinking water. By striving to meet the requirements of the SDWA, we are ensuring a future of healthy, clean drinking water for years to come.

Please remember that we are always available to assist you should you ever have any questions or concerns about your water.

Where Does My Water Come From?

The Town of Ipswich Water Treatment Plant draws water from Dow Reservoir and Bull Brook Reservoir, both located in the Parker River Watershed. The Town also draws water from five groundwater sources to augment this supply: Mile Lane and Browns Wells (Parker River Watershed) and Essex Road, Fellows Road, and Winthrop Estate Wells (Ipswich River Watershed). The Town makes every effort to monitor pumping and minimize withdrawals from the wells in the Ipswich River Watershed because of its fragile ecosystem.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/drink/hotline.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (MassDEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water and water supply. Water Subcommittee meetings are held periodically during the year. Please contact Victoria Halmen, Water Manager, at (978) 356-6635 ext. 2108 for dates and times of meetings. Water issues, including projects and upgrades, are also presented at Town Meetings in May and October each year.

Lead in Home Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

Water Treatment Process

The surface water treatment process consists of a series of steps. First, the water in Dow Reservoir is circulated and aerated with a solar-powered mixer, which starts the oxidation process to remove the high levels of organic materials, iron, and manganese that are present in the water. The water then goes to the headworks of the WTP, where chlorine dioxide, chlorine, and sodium hydroxide are added to complete the oxidation process, provide initial disinfection, and raise alkalinity. During the next step, polyaluminum chloride is added in our rapid mixers. This addition causes small particles (called floc) to adhere to one another during the mixing process, making them heavy enough to settle into a basin from which this sediment is removed. After settling, the water is filtered through four feet of fine coal (granular activated carbon). As smaller, suspended particles (called turbidity) are removed, the turbidity disappears and clear water overflows into our holding clearwell.

As the water collects in the clearwell, chlorine is added again as a precaution against any bacteria that may still be present. (We carefully monitor the amount of chlorine, adding the lowest quantity necessary to protect the safety of your water without compromising taste.) Finally, sodium hydroxide (to adjust the final pH and alkalinity), fluoride (to prevent tooth decay), and a corrosion inhibitor (to protect distribution system pipes) are added before the water is pumped into the distribution system and water standpipes, and finally into your home, school, or business.

The treatment process for our groundwater wells basically consists of the addition of chlorine (a precaution against bacteria), fluoride (to prevent tooth decay), and a corrosion inhibitor (to protect distribution system pipes). Although our groundwater meets or exceeds all State and Federal Drinking Water quality standards, our groundwater sources contain higher levels of minerals (e.g., iron, manganese, and calcium), which are not able to be removed by our groundwater treatment.

Managing Manganese Levels

Manganese is a naturally occurring mineral found in rocks, soil and groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet, but can have undesirable effects on certain sensitive populations at elevated concentrations. The U.S EPA and MassDEP have set an aesthetics-based Secondary Maximum Contaminant Level (SMCL) for manganese of 50 parts per billion (ppb), and health advisory levels. In addition, U.S. EPA and MassDEP have also established public health advisory levels. Drinking water may naturally have manganese and, when concentrations are greater than 50 ppb, the water may be discolored and taste bad. Over a lifetime, U.S. EPA recommends that people drink water with manganese levels less than 300 ppb and over the short term, U.S. EPA recommends that people limit their consumption of water with levels over 1000 ppb, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 300 ppb, nor should formula for infants be made with that water for longer than 10 days. See: http://www.epa.gov/safewater/ccl/pdfs/reg_determine1/ support_cc1_magnese_dwreport.pdf.

The Water Department continues to work with MassDEP, the Ipswich Health Director, the Massachusetts Department of Public Health (DPH) and its water quality consultant as we make every effort to reduce the manganese concentration within the distribution system.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please contact Victoria Halmen, Water Manager, at (978) 356-6635 ext. 2108, or Joseph F. Ciccotelli, Water Superintendent, at (978) 356-6639.

Lead and Copper Rule Violation (Lead Exceedance)

Our water system recently violated a drinking water standard. Even though this is not an emergency, as our customers, you have a right to know what happened, what you should do, and what we are doing to correct this situation.

We periodically sample water at consumers' taps for lead. The results of our 2014 testing for lead in our water supply show lead levels in the water above the limit or "action level" of 15 ppb.

The level of detected lead was elevated in four samples out of thirty-two taken at various locations throughout Town. A subsequent retest at the same locations showed an amount well below the recommended guideline in all but one of the samples.

We are in the process of contacting and discussing this problem with our water consultant to address this situation; when a determination is made, treatment process adjustments will be made to correct any deficiencies. You should not notice any change in the taste, odor, or overall water quality.

Please understand that the drinking water itself does not contain lead. If corrosive water conditions exist, lead from service connections as well as household plumbing will leach (dissolve) into the water and result in measurable lead levels in the sampled homes. Our corrosion control treatment process is designed to keep the water from being corrosive. We do, however, have to periodically make adjustments to our treatment process as overall system water quality changes.

What should I do?

Listed below are some steps you can take to reduce your exposure to lead:

- Run your water for 30-60 seconds or until it becomes cold before using it for drinking or cooking. This flushes any standing lead from the pipes.
- Don't cook with or drink water from the hot water tap; lead dissolves more easily into hot water.
- Do not boil your water to remove lead. Excessive boiling of the water makes the lead more concentrated; the lead remains when the water evaporates.

What does this mean?

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development.

Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

This is not an emergency. If it had been, you would have been notified immediately.

If you have any questions or concerns, please do not hesitate to contact Joe Ciccotelli at the WTP, (978) 356-6639, or Vicki Halmen at the Utilities Office, (978) 356-6635 ext. 2108.

Source Water Assessment

All of the sources in Ipswich have a high susceptibility to contamination due to the absence of hydrological barriers (i.e., a confining clay layer) that could prevent migration of contamination into the water system. A source's susceptibility to contamination, however, does not imply poor water quality.

In brief, Zone II contains potential sources of contamination, which, if present, could migrate and reach our source water. In Ipswich, Zone II is primarily a mixture of forests, agriculture, and residential land.

The State commends the Town's pursuit of purchasing land within the watershed areas, and on receiving a source protection grant through the MassDEP to develop a comprehensive surface water supply protection plan.

The complete Source Water Assessment Program (SWAP) report is available at the Utilities Department or online at www.mass.gov/dep/water/drinking/3144000.pdf.

The Benefits of Fluoridation

Fluoride is a naturally occurring element in many water supplies in trace amounts. In our system, the fluoride level is adjusted to an optimal level averaging one part per million (ppm) to improve oral health in children. At this level, it is safe, odorless, colorless, and tasteless. Our water system has been providing this treatment since 1971. There are over 3.9 million people in 140 Massachusetts water systems and 184 million people in the U.S. who receive the health and economic benefits of fluoridation.

Sampling Results

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below show only those contaminants that were detected in the water. We feel it is important that you know exactly what, and how much, was detected.

The sample schedule also requires us to monitor for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2014	15	0	0.7	0.3–1.0	No	Erosion of natural deposits
Arsenic[1] (ppb)	2013	10	0	6	6–6	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2013	2	2	0.074	0.074–0.074	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2014	[4]	[4]	0.64	0.22–0.83	No	Water additive used to control microbes
Chlorine Dioxide (ppb)	2014	[800]	[800]	210	80–400	No	Water additive used to control microbes
Chlorite (ppm)	2014	1	0.8	0.39	0.02–0.91	No	By-product of drinking water disinfection
Combined Radium (pCi/L)	2014	5	0	0.3	0.1–0.4	No	Erosion of natural deposits
Fluoride (ppm)	2014	4	4	0.69	0.04–1.01	No	Water additive that promotes strong teeth
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2014	60	NA	8.6	1.0–23.3	No	By-product of drinking water disinfection
Nitrate (ppm)	2014	10	10	0.82	0.20–2.9	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Perchlorate (ppb)	2014	2	NA	0.2	0.15–0.31	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
TTHMs [Total Trihalomethanes]–Stage 2 (ppb)	2014	80	NA	45.2	2.4–112.3	No	By-product of drinking water disinfection
Tetrachloroethylene (ppb)	2014	5	0	2.5	0.10–8.6	No	Discharge from factories and dry cleaners
Total Coliform Bacteria (# positive samples)	2014	1 positive monthly sample	0	1	NA	No	Naturally present in the environment
Total Organic Carbon (ppm)	2014	TT	NA	1.12	0.10–2.25	No	Naturally present in the environment
Turbidity[2] (NTU)	2014	TT	NA	0.16	0.04–0.16	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2014	TT=95% of samples <0.3 NTU	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	EXCEEDANCE	TYPICAL SOURCE
Copper (ppm)	2014	1.3	1.3	0.108	0/32	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2014	15	0	17	4/32	Yes	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	EXCEEDANCE	TYPICAL SOURCE
Chloride (ppm)	2014	250	NA	68	32–112	No	Runoff/leaching from natural deposits
Color (Units)	2014	15	NA	4	1–10	No	Naturally occurring organic materials
Iron (ppb)	2014	300	NA	100	ND–270	No	Leaching from natural deposits; Industrial wastes
Manganese (ppb)	2014	50	NA	95	10–1,210	Yes	Leaching from natural deposits
pH (Units)	2014	6.5–8.5	NA	7.72	6.28–8.79	No	Naturally occurring
Sulfate (ppm)	2014	250	NA	16	6–22	No	Runoff/leaching from natural deposits; Industrial wastes
Zinc (ppm)	2014	5	NA	0.03	ND–0.03	No	Runoff/leaching from natural deposits; Industrial wastes

UNREGULATED CONTAMINANT MONITORING REGULATION 3 (UCMR3)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Chlorate (ppb)	2014	190	160–220	By-product of drinking water disinfection; Agricultural defolilant
Chromium-6 (ppb)	2014	0.03	ND–0.07	Naturally occurring element; Used in making steel and other alloys; Used for chrome plating, dyes and pigments, leather tanning, and wood preservation
Strontium (ppb)	2014	61	58–63	Naturally occurring element; Used in the production of cathode-ray tube televisions
Vanadium (ppb)	2014	0.10	ND–0.20	Naturally occurring elemental metal; Used as a chemical intermediate and catalyst

UNREGULATED AND OTHER SUBSTANCES [3]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Hardness (ppm)	2014	130	44–220	Naturally occurring
Potassium (ppm)	2014	2.1	1.2–3.2	Naturally occurring element
Sodium (ppm)	2014	35	28–58	Naturally occurring element

[1] While your drinking water meets the U.S. EPA's standard for arsenic, it does contain low levels of arsenic. The EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

[2] Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

[3] Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of monitoring unregulated contaminants is to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted.

Definitions

90th Percentile: Out of every 10 homes sampled, 9 were at or below this level.

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.